



Niino Laboratory

[Laboratory for Additive Manufacturing Science]

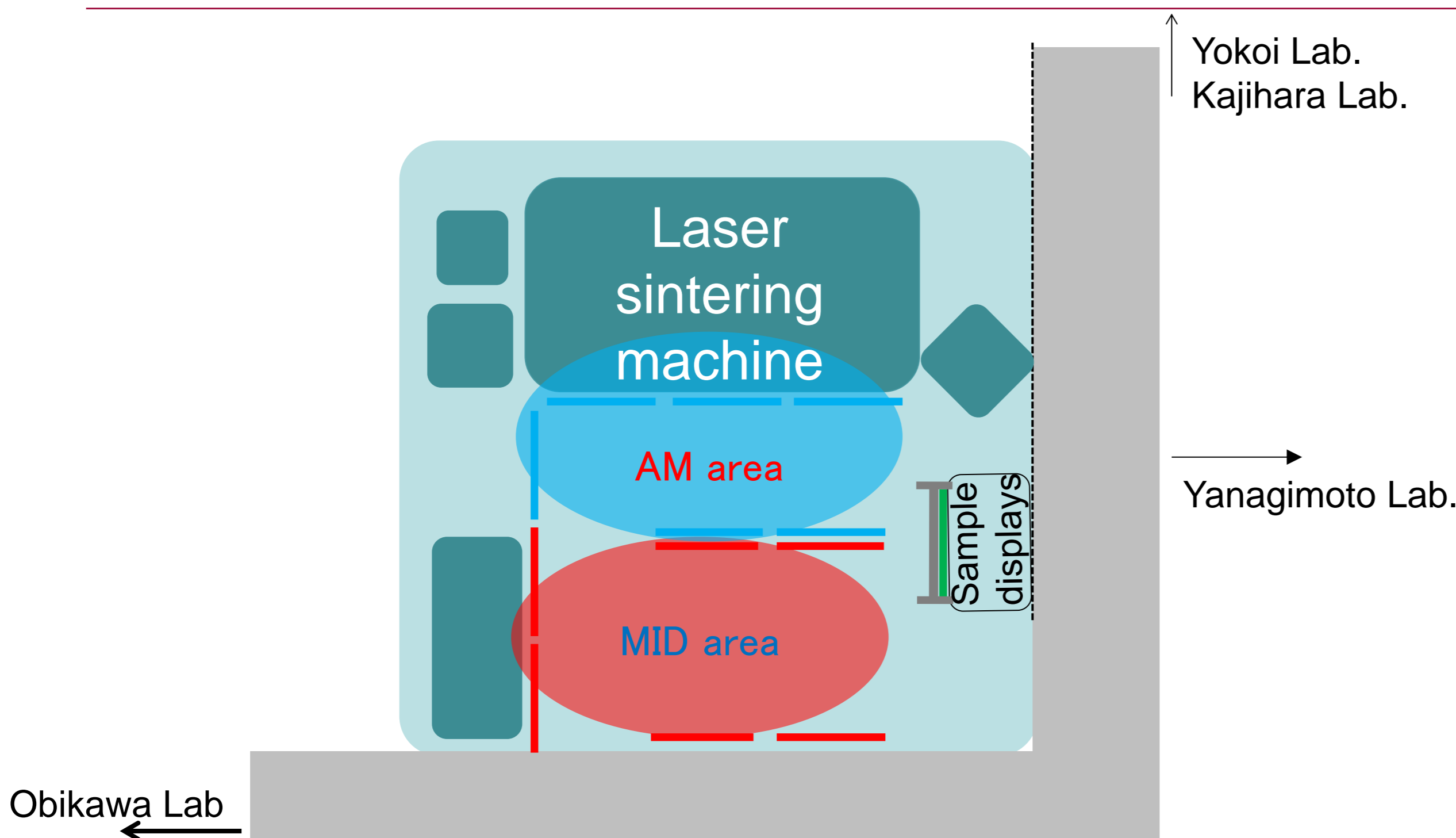
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<http://lams.iis.u-tokyo.ac.jp>

3D Printing and MID (Molded Interconnect Device)

Functional Geometrically-shaped Parts Manufacturing Technologies: Additive Manufacturing Technology and Molded Interconnect Devices

Developing functional 3D geometrical shapes out of various materials and composites enables us to create broad series of mechatronic devices and systems. In this laboratory, we emphasize on Additive Manufacturing and MID (Molded Interconnect Device) fabrication technologies, and its applications.



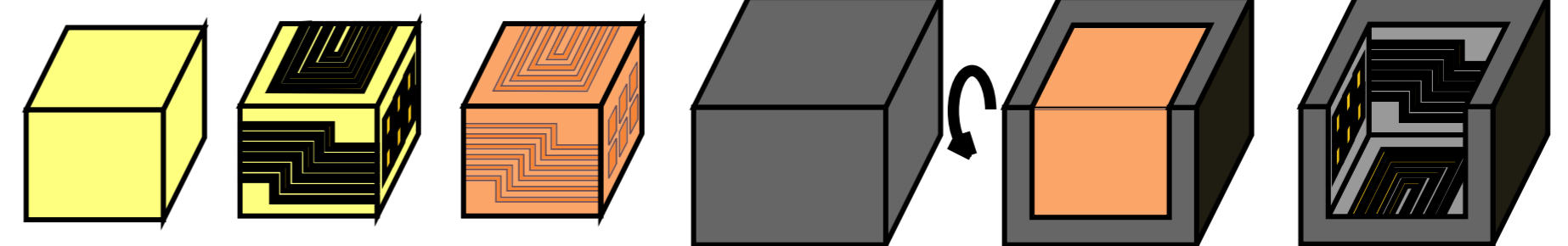
Research Projects

MID : Molded Interconnect Device

Research on Fabrication Process

- MID fabrication process utilizing sacrificial material

MID Application on Mechatronic Devices



Circuit pattern transfer process to inner surface of parts using sacrificial material.

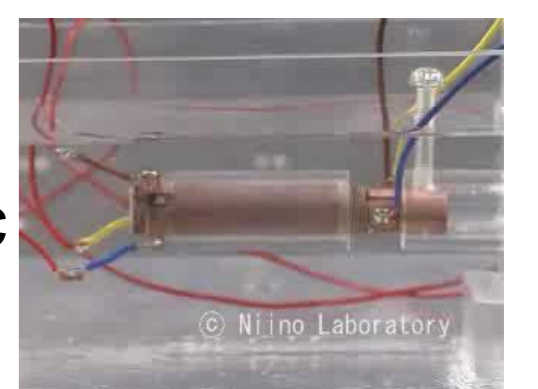
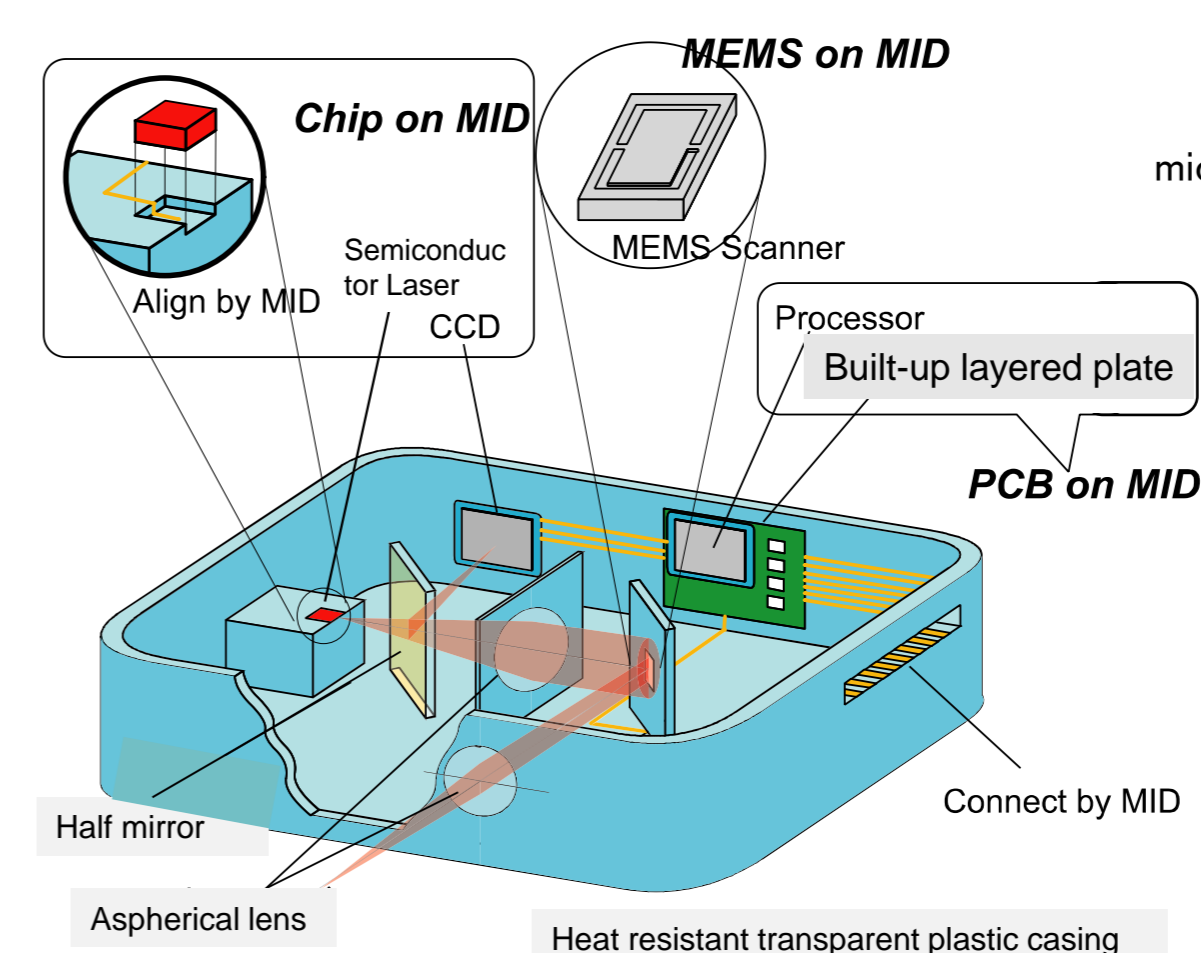
Applicational Researches

- Application on MID technology to mechatronic devices

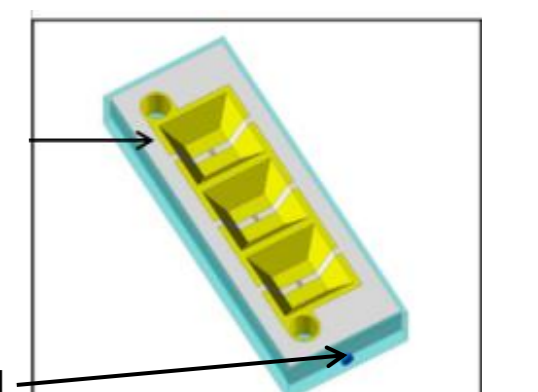
MID Application on Mechatronic Devices

- High functional fluid channel by injection molding

Injection Molded Functional Fluid Channel



Electrostatic actuation using MID technology



MID part with a micro fluid channel inside

Additive Manufacturing

Research on fabrication process

- Preheating Process in Laser Sintering Fabrication
- Low Temperature Laser Sintering with Heat Resistance Powder



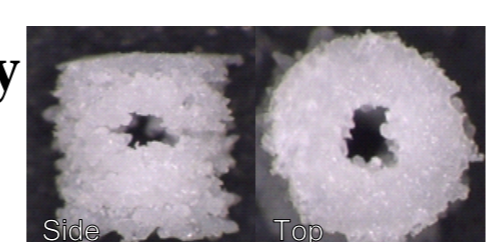
Process that uses no preheating



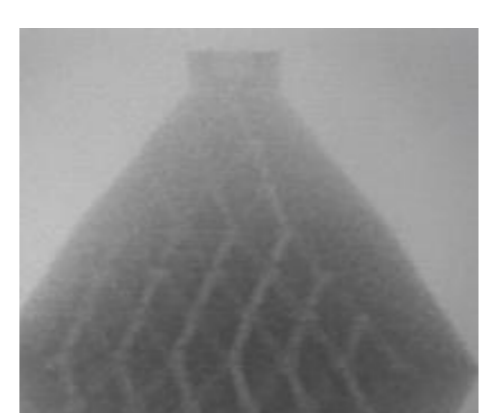
AM product made of high heat-resistant resin

Application research

- Laser Sintering Fabrication realizing High Porosity and Intensity
- Laser Sintering Fabrication of Tissue Engineering Scaffolds



Minute structure fabrication

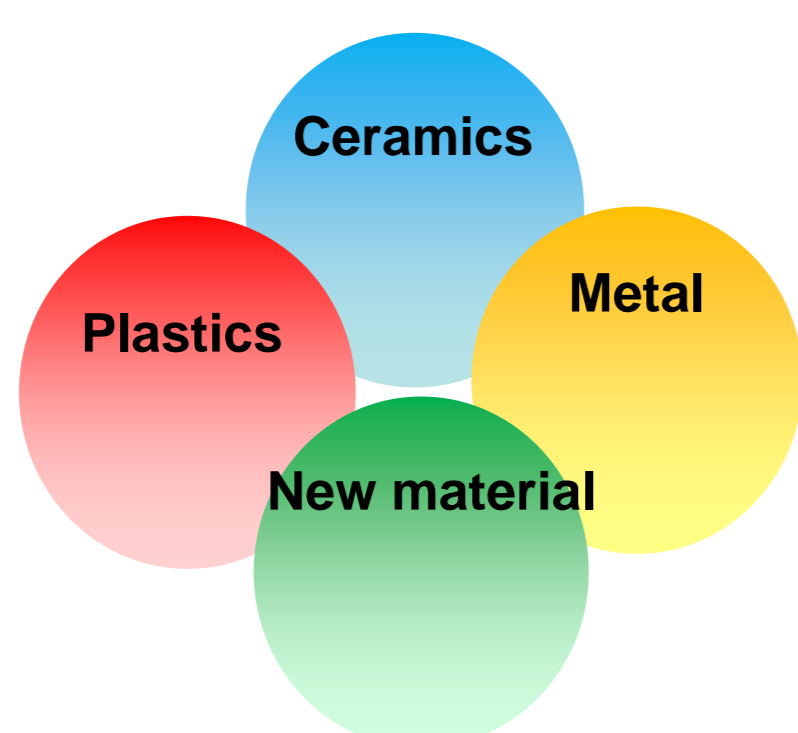


Micro channels built inside a structure

- Application of Photonic Device using Laser Sintering Fabrication



Amorphous Structure



Arbitrary surface, form, and shape structuring

Circuit patterning to arbitrary curved surface

